

## CLAIMS

What is claimed is:

1. A method for facilitating collaborative updating of a file, the method comprising:

- (a) accepting from one of a plurality of users, and storing, a first data set (i) representing a first version of the file and (ii) designating one or more recipients of the initial version; and
- (b) then, for each one of a plurality of sequentially updated versions of the file:
  - (1) accepting, from one of the plurality of users, a second data set (i) representative of a difference between the updated version of the file and an immediately previous version of the file and (ii) designating one or more recipients of the updated version; and
  - (2) transmitting a third data set representative of the updated version of the file to the recipients of the updated version designated by the second data set;

wherein

- (c) for each recipient designated by the second data set who accessed the immediately previous version of the file, the third data set consists substantially of the difference between the updated version of the file and the previous version of the file.

2. The method of claim 1 further comprising, before accepting the first data set:

- (a) having one of the users originate an original version of the file; and

(b) then accepting a plurality of sequentially updated versions of the file prior to the first version.

3. The method of claim 1 wherein for each recipient of the updated version who was not also designated as a recipient of the previous version, the third data set consists substantially of the file as updated.

4. The method of claim 1 further comprising storing the data sets as data files within a hierarchical structure of directories.

5. The method of claim 4 further comprising generating a plausibly unique identification code associated with the file, wherein each directory includes in its name at least a portion of the identification code.

6. The method of claim 5 wherein the identification code includes digits that are of a statistically uniform distribution.

7. The method of claim 4 further comprising, for each one of the plurality of users, generating a plausibly unique identification code associated with the user, wherein each data file includes in its name at least a portion of an identification code associated with one of the plurality of users.

8. The method of claim 1 wherein difference data of the second data set includes data identifying bytes of the versions that differ.

9. The method of claim 1 wherein difference data of the second data set includes data identifying blocks of the versions that differ.

10. The method of claim 1 further comprising:

- (a) providing a file server accessible to all of the plurality of users; and
- (b) having the file server accept and transmit the first, second, and third data sets.

11. The method of claim 10 further comprising:

- (a) providing an e-mail server accessible to all of the plurality of users; and
- (b) having the e-mail server relay e-mail messages among the plurality of users, wherein the e-mail messages each include a reference by which designated recipients can retrieve a data set from the file server.

12. The method of claim 11 wherein the references are attachments that each contain code implementing a direct file access module.

13. The method of claim 11 wherein the e-mail messages each further include a message-encoded data stream having a series of data frames, the frames comprising:

- (a) a message recipient frame;
- (b) a file viewer frame including a header; and
- (c) a file editor frame including a header;

wherein

(d) at least one of the viewer and editor frames include (1) for the viewer frame, data identifying a viewer authorized to view the file and (2) for the editor frame, data identifying an editor authorized to modify the file.

14. The method of claim 10 further comprising storing the data sets as data files within a hierarchical structure of directories.

15. The method of claim 14 further comprising generating a plausibly unique identification code associated with the file, wherein each directory includes in its name at least a portion of the identification code.

16. The method of claim 15 wherein the identification code includes digits that are of a statistically uniform distribution.

17. The method of claim 10 further comprising having the file server store data in a separate file data set for each one of the plurality of users.

18. The method of claim 17 further comprising, for each one of the plurality of users, generating a plausibly unique identification code associated with the user, wherein each file data set includes in its name at least a portion of an identification code associated with one of the plurality of users.

19. A data storage medium comprising indicia of instructions for one or more processors to perform a method for facilitating collaborative updating of a file, the method comprising:

(a) accepting from one of a plurality of users, and storing, a first data set (i) representing a first version of the file and (ii) designating one or more recipients of the initial version; and

(b) then, for each one of a plurality of sequentially updated versions of the file:

(1) accepting, from one of the plurality of users, a second data set (i) representative of a difference between the updated version of the file and an immediately previous version of the file and (ii) designating one or more recipients of the updated version; and

(2) transmitting a third data set representative of the updated version of the file to the recipients of the updated version designated by the second data set;

wherein

(c) for each recipient designated by the second data set who accessed the immediately previous version of the file, the third data set consists substantially of the difference between the updated version of the file and the previous version of the file.

20. The data storage medium of claim 19 wherein the method further comprises, before accepting the first data set, accepting a plurality of sequentially updated versions of the file prior to the first version.

21. The data storage medium of claim 19 wherein for each recipient of the updated version who was not also designated as a recipient of the previous version, the third data set consists substantially of the file as updated.
22. The data storage medium of claim 19 wherein the method further comprises storing the data sets as data files within a hierarchical structure of directories.
23. The data storage medium of claim 22 wherein the method further comprises generating a plausibly unique identification code associated with the file, wherein each directory includes in its name at least a portion of the identification code.
24. The data storage medium of claim 23 wherein the identification code includes digits that are of a statistically uniform distribution.
25. The data storage medium of claim 22 wherein the method further comprises, for each one of the plurality of users, generating a plausibly unique identification code associated with the user, wherein each data file includes in its name at least a portion of an identification code associated with one of the plurality of users.
26. The data storage medium of claim 19 wherein difference data of the second data set includes data identifying bytes of the versions that differ.
27. The data storage medium of claim 19 wherein difference data of the second data set includes data identifying blocks of the versions that differ.

28. The data storage medium of claim 19 wherein the method executes on a file server accessible to all of the plurality of users and further comprises having the file server accept and transmit the first, second, and third data sets.

29. A system for facilitating collaborative updating of a file, the system comprising:

(a) means for accepting from one of a plurality of users, and storing, a first data set (i) representing a first version of the file and (ii) designating one or more recipients of the initial version; and

(b) means for, for each one of a plurality of sequentially updated versions of the file:

(1) accepting, from one of the plurality of users, a second data set (i) representative of a difference between the updated version of the file and an immediately previous version of the file and (ii) designating one or more recipients of the updated version; and

(2) transmitting a third data set representative of the updated version of the file to the recipients of the updated version designated by the second data set;

(3) wherein for each recipient designated by the second data set who accessed the immediately previous version of the file, the third data set consists substantially of the difference between the updated version of the file and the previous version of the file.

30. A method for managing transmission of versions of a file among a plurality of users, the method comprising:

- (a) storing a first data set received from a first user that is representative of a first version of the file;
- (b) transmitting the first data set to the second user as a result of the second user having activated a reference to the first version, which reference is contained in an e-mail message received from the first user;
- (c) storing a second data set received from the second user that is representative of the difference between a second version of the file and the first version of the file;
- (d) transmitting the second data set to the first user as a result of the first user having activated a reference to the second version, which reference is contained in an e-mail message received from the second user; and
- (e) as a result of the third user having activated a reference to the second version, which reference is contained in an e-mail message received from the second user, (1) patching the first version of the file with the second data set, thereby creating a third data set representing the second version of the file; and (2) transmitting the third data set to the third user.



31. The method of claim 30 further comprising storing data in a separate file data set for each one of the plurality of users.

32. The method of claim 31 further comprising generating separate plausibly unique identification codes associated with respective ones of the plurality of users, wherein each data file includes in its name at least a portion of a respective identification code.

33. A data storage medium comprising indicia of instructions for one or more processors to perform a method for managing transmission of versions of a file among a plurality of users, the method comprising:

- (a) storing a first data set received from a first user that is representative of a first version of the file;
- (b) transmitting the first data set to the second user as a result of the second user having activated a reference to the first version, which reference is contained in an e-mail message received from the first user;
- (c) storing a second data set received from the second user that is representative of the difference between a second version of the file and the first version of the file;
- (d) transmitting the second data set to the first user as a result of the first user having activated a reference to the second version, which reference is contained in an e-mail message received from the second user; and
- (e) as a result of the third user having activated a reference to the second version, which reference is contained in an e-mail message received from the second

user, (1) patching the first version of the file with the second data set, thereby creating a third data set representing the second version of the file; and (2) transmitting the third data set to the third user.

34. The data storage medium of claim 33 wherein the method further comprises storing data in a separate file data set for each one of the plurality of users.

35. The data storage medium of claim 34 wherein the method further comprises generating separate plausibly unique identification codes associated with respective ones of the plurality of users, wherein each data file includes in its name at least a portion of a respective identification code.

36. A file server accessible to a plurality of users including a first, second, and third user, the file server comprising:

- (a) means for storing a first data set received from a first user that is representative of a first version of the file;
- (b) means responsive to the second user having activated a reference to the first version, which reference is contained in an e-mail message received from the first user, for transmitting the first data set to the second user;
- (c) means for storing a second data set received from the second user that is representative of the difference between a second version of the file and the first version of the file;

(d) means responsive to the first user having activated a reference to the second version, which reference is contained in an e-mail message received from the second user, for transmitting the second data set to the first user; and

(e) means responsive to the third user having activated a reference to the second version, which reference is contained in an e-mail message received from the second user, for (1) patching the first version of the file with the second data set, thereby creating a third data set representing the second version of the file; and (2) transmitting the third data set to the third user.